

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)



Date of mailing  
(day/month/year) 12 JULY 2005 (12.07.2005)

Applicant's or agent's file reference  
PCT-040410

FOR FURTHER ACTION

See paragraph 2 below

International application No.

**PCT/KR2005/000554**

International filing date (day/month/year)

**28 FEBRUARY 2005 (28.02.2005)**

Priority date(day/month/year)

10 APRIL 2004 (10.04.2004)

International Patent Classification (IPC) or both national classification and IPC

**IPC7 C07C 31/24**

Applicant

**AMOREPACIFIC CORPORATION et al**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☐ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



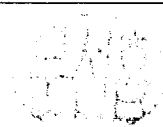
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**WRITTEN OPINION OF THE  
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**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	1 - 7	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	1 - 7	YES
	Claims	NONE	NO
Industrial applicability (IA)	Claims	1 - 7	YES
	Claims	NONE	NO

**2. Citations and explanations :**

**1. Reference is made to the following documents:**

D1 : EP0163806 A1(MIRANOL CHEMICAL COM.) 11. DEC. 1985

D2 : JP04089450 A(KAO CORP.) 23 MAR. 1992

**2. Novelty and Inventive Step**

The present invention relates to a pentaerythritol derivative compound represented by formula 1, which improves the moisture retaining ability of the stratumcorneum and shows high moisturizing ability even in dry condition, a preparation method thereof, and a liquid crystalbase containing the same.

D1 and D2, which are considered to represent the most relevant state of the art, disclose pentaerythritol compounds or mixture for hair and skin cosmetics.

Comparing the compounds in claim 1 of the present invention with those of D1 and D2, D1 and D2 disclose partially pentaerythritol group but do not disclose the chemical structure comprising pentaerythritol group and ethoxylate or pentaerythritol propoxylate group together having an ethylene glycol repeat unit(-OCH<sub>2</sub>CH<sub>2</sub>O-). Also they do not disclose the same compounds as the pentaerythritol derivatives of the present invention.

Therefore, claim 1 of the present invention is not disclosed in any of the prior art documents above and thus meets the requirement of PCT Article 33(2).

As stated above, the chemical structures of D1 and D2 are different from those of the compounds of claim 1 and do not disclose the feature of the present invention that improves the moisture retaining ability of the stratumcorneum and shows high moisturizing ability even in dry condition. Consequently, the invention claimed in claim 1 cannot be easily invented from the teachings of D1 and D2 and meets the requirement of PCT Article 33(3).

(Continued on Supplemental Sheet.)

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of :

Box No. IV

Since independent claim 1 is novel and involves an inventive step, claims 2-7 that relate to a method for preparing the pentaerythriol derivatives of claim 1 or a liquid crystal base and oil-soluble moisturizers comprising the pentaerythriol derivatives of claim 1, are considered to be novel and involve an inventive step under PCT Article 33(2)-(3).

**3. Industrial Applicability**

The subject matter of claims 1-7 is considered to be industrially applicable under PCT Article 33(4).